

Remarks

Applicants respectfully request reconsideration of the present application in view of the following remarks. No claims have been amended, added or cancelled. Therefore, claims 11-31 are pending in the present application.

Claims 11-31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2003/0203267 to Chou et al. ("the Chou reference") in view of U.S. Patent No. 6,626,650 to Kenchington et al. ("the Kenchington reference").

Independent claim 11 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell Stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The gas spring includes a first membrane, a second membrane, and means for sealing edges of the first and second membranes to define a closed chamber therebetween for capture of gas. The gas spring also includes first valve means for admitting gas to the chamber and second valve means for exhausting gas from the chamber.

Applicants maintain that the proposed combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring as recited in claim 11. In the Office Action mailed March 30, 2009 ("Office Action"), the Examiner stated that the Chou reference teaches the gas spring recited in claim 11. *See Office Action*, pgs. 2-3. Specifically, the Examiner pointed specifically to paragraph [0067] of the Chou reference to support the assertion that a gas spring is disclosed therein. *See id.* Applicants

once again respectfully disagree with the Examiner's position that a gas spring is disclosed in the Chou reference.

As noted in the Response to Office Action mailed on December 5, 2008 ("previous response"), paragraph [0067] of the Chou reference states that FIG. 5 discloses a compression member (301) configured to exert a compressive force to the components (340, 350, 360, 370, 380, 390) and the seals (345, 355, 365, 375, 385, 395) of an electrochemical device (300). As best seen in FIG. 5 of the Chou reference, the compression member (301) includes a tie rod having two hex nuts attached to the ends of the tie rod on opposite ends of the electrochemical device (300). Applicants submit that the combination of the tie rod and hex nuts shown in FIG. 5 is not a gas spring.

In the previous response, it was also noted that paragraph [0067] of the Chou reference states that FIG. 6 discloses a compression member (301) including two end plates (302, 303) that operate in conjunction with one or more tie rods and hex nuts to compress and maintain the electrochemical device (300) in an assembled state between end plates (302, 303). The combination of the end plates (302, 303) disposed on opposing sides of the electrochemical device (300), the tie rods, and the hex nuts do not amount to a gas spring as defined in claim 11.

In the present Office Action, the Examiner made reference to a specific portion of paragraph [0067] of the Chou reference in support of the position that a gas spring is disclosed in the Chou reference. *See Office Action*, pg. 3. In particular, it was noted by the Examiner that the Chou reference states that the

compression member (301) includes "springs, hydraulic or pneumatic pistons, pressure pads or other resilient compressive means" *Chou*, ¶ [0067]. See *Office Action*, pg. 3. Even though the Examiner acknowledged that this passage does not specifically recite what type of spring is being referred to in the Chou reference, the Examiner concluded that this general disclosure of a "spring" may be used to anticipate the gas spring set forth in claim 11. See *id.*

Applicants submit that there is no basis for concluding that the "spring" disclosed in paragraph [0067] of the Chou reference is a gas spring as defined in claim 11. Since the Examiner has acknowledged that the Chou reference does not explicitly disclose that the "spring" in the Chou reference is a gas spring, Applicants assume that the Examiner is relying on an inherency theory.

It is the Examiner's burden to "make it clear that the missing descriptive matter is necessarily present in the thing described in the prior art reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities." *Id.* at 1269 (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)). "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.*

There is nothing in the Chou reference to indicate that the springs mentioned therein are gas springs as particularly claimed by Applicants. The general reference to a "spring" likely refers to a spring that could readily be adapted to and used in conjunction with the centrally located rod and nut shown in FIGS. 5 and 6. For instance, the spring referred to in the Chou reference

could be a reference to a mechanical spring of some type, such as a mechanical compression spring, metallic coil or leaf spring. The Office Action also makes passing reference to column 3, lines 7-9 of the Kenchington reference, which mentions a gas spring. *See Office Action*, pg. 3. However, the gas spring mentioned in the Kenchington reference relates to a discussion of the background art, which relates to the use of a gas spring in a Stirling engine, not in relation to a fuel cell assembly. *See Kenchington*, Col. 3, lines 1-14.

It should also be noted that paragraph [0067] of the Chou reference incorporates by reference the compressive members that are disclosed in U.S. Patent Nos. 4,478,917 and 5,176,966. Both of the compressive members disclosed in the above-referenced patents include two rigid plates positioned on opposite sides of a fuel cell stack assembly, which are compressed using a plurality of tie rods and nuts, similar to the arrangement shown in FIG. 6 of the Chou reference. As is the case with the Chou reference, neither of the above-referenced patents disclose a gas spring as set forth in claim 11.

Since nothing in paragraph [0067] and FIGS. 5 and 6 of the Chou reference disclose a gas spring as set forth in claim 11, Applicants submit that the proposed combination of the Chou reference and the Kenchington reference fail to teach or suggest all of the limitations included in claim 1.

Furthermore, Applicants maintain that the proposed combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring including a first membrane, a second membrane, and means for sealing edges of the first and second membranes to

define a closed chamber therebetween for the capture of gas as recited in claim

11. In rejecting this portion of claim 11, the Examiner maintains that the compression member (301) and FIGS. 5 and 6 teach the first and second membranes of the gas spring. *See Office Action*, pg. 2. As noted in the previous response, the Examiner was not specific as to which components of the compression member (301) are being designated as the first and second membranes of the gas spring in claim 11. Applicants respectfully request that the Examiner clarify and provide Applicants with more detail in regard to which components in the Chou reference represent first and second membranes of the gas spring set forth in claim 11.

For purposes of this response, Applicants will continue to assume that the Examiner is designating the end plates (302, 303), which are components of the compression member (301), as the first and second membranes of the gas spring disclosed in claim 11.

The Examiner cites paragraphs [0068]-[0075] of the Chou reference to support the assertion that the edges of the end plates (302, 303) are sealed to define a closed chamber for the capture of gas. *See Office Action*, pg. 2. Paragraphs [0068]-[0075] of the Chou reference state that each of the fuel cell components (340, 350, 360, 370, 380, 390) are sealed together using multi-layer seals (345, 355, 365, 375, 385, 395) to form at least one boundary between fuel and oxidant streams (i.e., fuel and oxidant flow chambers) and to define a junction between the fuel cell components. *See, e.g., Chou* at ¶ [0071]. Applicants therefore assume that the Examiner is taking the position that the

closed chamber recited in claim 11 corresponds to the fuel and oxidant flow chambers positioned between the two end plates (302, 303) (i.e., first and second membranes) in the Chou reference. Thus, according to the Examiner, the two end plates (302, 303) in the Chou reference are the first and second membranes of the gas spring in claim 11, and the closed chamber defined by the end plates (302, 303) is one or more of the fuel and oxidant flow passages defined within the fuel cell stack itself. Based on this interpretation of the Chou reference, the gas spring defined in the Chou reference cannot be disposed between the fuel cell stack and a supporting structure (as recited in claim 11) since the fuel cell stack is positioned between the first and second membranes (i.e., end plates (302, 303)) that are used to form the closed chamber of the gas spring. As such, Applicants submit that the Chou reference does not teach or suggest a gas spring disposed between the fuel cell stack and the supporting structure as recited in claim 11.

Moreover, Applicants submit that the proposed combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed between a fuel cell stack and a supporting structure, wherein the supporting structure surrounds the fuel cell stack as recited in claim 11. In the Office Action, the Examiner made reference to FIGS. 5 and 6 of the Chou reference, and stated that the fuel cell components (340, 350, 360) represent the fuel cell stack in claim 11, and the ceramic substrate within each fuel cell component correspond to the support structure set forth in claim 11. *See Office Action*, pgs. 2-3. In response to the position taken

by the Examiner, Applicants believe it is important to point out that claim 11 specifically states that the support structure surrounds the fuel cell stack. Therefore, it is unclear to the Applicants how the ceramic substrate within each fuel cell component can be interpreted as the support structure in claim 11, when the ceramic substrate does not surround the fuel cell stack. In other words, Applicants do not see how the ceramic substrate within each fuel cell component shown in FIGS. 5 and 6 of the Chou reference surround the fuel cell stack (i.e., fuel cell components (340, 350, 360)). If the Examiner decides to maintain the present rejection, it is respectfully requested that the Examiner specifically identify which component(s) in FIGS. 5 and 6 of the Chou reference are being interpreted as the "ceramic substrate within each fuel cell component." In view of the above, it is submitted that the Chou reference does not disclose a gas spring positioned between a fuel cell stack and a supporting structure that surrounds the fuel cell stack, as recited in claim 11.

For at least the reasons set forth above, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest all of the limitations included in claim 11. It is therefore requested that the rejection of claim 11 be withdrawn. As claims 12 and 14-20 depend either directly or indirectly from claim 11, these claims are not taught or suggested by the proposed combination of references for at least the same reasons that were set forth above with respect to claim 11. It is requested that the rejection of claims 12 and 14-20 be withdrawn.

Dependent claims 15-18 include additional limitations that are not taught or suggested by the Chou reference or the Kenchington reference. Claim 15 states that the means for sealing includes a rigid frame element disposed between the first and second membranes. Claim 16 states that the frame element has a trough-shaped cross section. Claims 17 and 18 state that the trough shape is radially concave or radially convex, respectively.

The Examiner has not provided any explanation as to how the Chou reference or the Kenchington reference render claims 15-18 obvious. *See Ex parte Humphreys*, 24 USPQ2d 1255 (BPAI 1992) (stating that a prima facie case of obviousness is not established if the examiner fails to provide specific reasons to support rejection). Applicants respectfully request that a detailed explanation be provided by the Examiner in support of the rejection of claims 15-18.

Independent claim 13 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell Stack, and gas spring means disposed within the assembly between the stack and the supporting structure. The gas spring means defines a closed chamber and includes an inlet valve for admitting gas into the chamber and an outlet valve for exhausting gas from the chamber.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including gas spring means disposed within the fuel cell assembly between a fuel cell stack and a supporting structure, wherein the supporting structure surrounds the

fuel cell stack as recited in claim 13. It is therefore requested that the rejection of claim 13 be withdrawn.

Independent claim 21 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The spring includes a membrane defining a gas chamber. The fuel cell assembly also includes a first valve positioned in the membrane for admitting gas to the chamber, and a second valve positioned in the membrane for exhausting gas from the chamber.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed within the fuel cell assembly between a fuel cell stack and a supporting structure, wherein the supporting structure surrounds the fuel cell stack as recited in claim 21. It is therefore requested that the rejection of claim 21 be withdrawn. As claims 22-29 depend either directly or indirectly from claim 21, these claims are not taught or suggested by the proposed combination of references for at least the same reasons that were set forth with respect to claim 21. It is requested that the rejection of claims 22-29 be withdrawn.

Dependent claims 24-27 include additional limitations that are not taught or suggested by the Chou reference or the Kenchington reference. Claim 24 states that the seal includes a rigid frame element disposed between the first and second membranes. Claim 25 states that the frame element has a trough-

shaped cross section. Claims 26 and 27 state that the trough shape is radially concave or radially convex, respectively.

The Examiner has not provided any explanation as to how the Chou reference or the Kenchington reference render claims 24-27 obvious. *See Humphreys*, 24 USPQ2d at 1255. Applicants respectfully request that a detailed explanation be provided by the Examiner in support of the rejection of claims 24-27.

Independent claim 30 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The spring includes a membrane defining a gas chamber, wherein the gas within the closed chamber is at a first pressure. The assembly further includes a first valve positioned in the membrane for admitting gas to the chamber from an exterior of the gas spring, and a second valve positioned in the membrane for exhausting gas from the chamber into the exterior, wherein the exterior is at a second pressure.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed within the fuel cell assembly between a fuel cell stack and a supporting structure, wherein the supporting structure surrounds the fuel cell stack as recited in claim 30. It is therefore requested that the rejection of claim 30 be withdrawn. As claim 31 depends from claim 30, this claim is not taught or

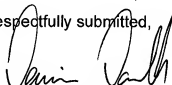
suggested by the proposed combination of references for at least the same reasons that were set forth with respect to claim 30. It is requested that the rejection of claim 31 be withdrawn.

Conclusion

In light of the foregoing, Applicants submit that claims 11-31 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

Applicants do not believe that any fee is due at this time. However, the Commissioner is hereby authorized to charge any fee that may have been overlooked to Deposit Account No. 50-4635.

Respectfully submitted,



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